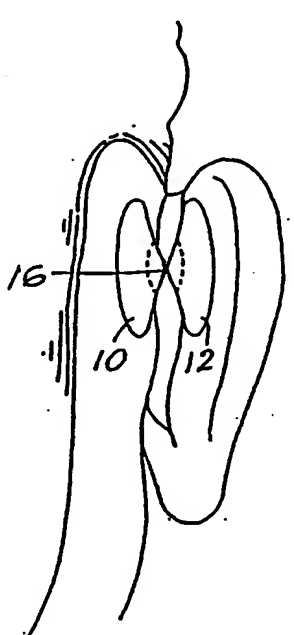


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(21) International Application Number: PCT/US93/10105 (22) International Filing Date: 27 October 1993 (27.10.93) (30) Priority data: 07/967,606 28 October 1992 (28.10.92) US (71)(72) Applicant and Inventor: IERULLI, Joseph, Vincent [US/US]; 3926 S.W. Water Avenue, Portland, OR 97201 (US). (74) Agent: AGARWAL, Dinesh; Shlesinger, Arkwright & Garvey, 3000 South Eads Street, Arlington, VA 22202 (US).		(81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, US, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: EAR FLATTENING DEVICE (57) Abstract <p>An ear flattening device having a pair of flexible pads (10, 12) connected directly together by bonding (14) or riveting (16) at the longitudinal and lateral center point of the pair of pads (10, 12). The outer sides of the pads (10, 12) are provided with a layer of pressure sensitive adhesive (18) for releasably bonding the pads (10, 12) one to the back side of the ear and the other to the confronting skin surface of the head. The adhesive layers (18) are protected temporarily by a removable cover sheet (20). Preferably, the pads (10, 12) are anatomically configured with one side edge that corresponds to the curvature of the concha of the ear so that the device may be positioned as closely as possible to the concha while maximizing the skin surface area behind the ear for adhesion of the pads (10, 12). In a second embodiment a second layer of pad material (10, 12) is adhered to the outside surfaces of the pad members (10, 12).</p> 		

EAR FLATTENING DEVICE

BACKGROUND OF THE INVENTION

This invention relates to cosmetic devices, and more particularly to a device for drawings the ears closer to the head, for cosmetic enhancement. More specifically, this invention reflects improvements made through research and experimentation on an earlier device in which I share an interest and is disclosed in U.S. Patent No. 5,076,262 issued 31 December 1991.

As had been explained in that patent, public figures, such as artists, actors, speakers, models and others, whose ears protrude significantly from the face, attempt a wide variety of corrective techniques in an effort to enhance their appearance. These techniques range from costly cosmetic surgery to the use of wads of adhesive tape interposed between the ears and the head.

Cosmetic surgery is more costly than most can afford, and the lack of reliability of adhesion renders the use of wads of adhesive tape unsatisfactory. Intermediate those extremes, a wide variety of various devices have been proposed in the art to bring the ears closer to the sides of the head. Most of these devices involve large and unsightly constructions which are configured to fit over the head and ears and simply compress them against the side of the head, thus drawing attention to an unnatural appearance.

The earlier mentioned U.S. Patent No. 5,076,262, U.S.

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Patent No. 1,050,744 and German Patentschrift No. 240,649 however disclose devices which, although structurally distinct from the present invention, are generally relevant in concept. In each of these cases, a pair of opposite, skin-engaging pads or discs are joined together in spaced apart relationship by an interconnecting, specifically flexible securing member configured to retain the opposite disc members a desired distance apart from each other, and hence how closely an ear will be held to the side of a head. In the first patent identified earlier, this securing member comprises a one-piece, flexible block 14 of sponger rubber, foamed synthetic resin or other elastomeric material of suitable flexibility and compressibility to accomplish the purpose. The opposite discs are bonded to the sponge rubber spacer block which is disclosed as being provided in desired thicknesses in order to accomplish desired spacing between skin-engaging pads. The other two references identified earlier disclose substantially identical devices having opposite, skin-engaging disc members secured flexibly together in spaced apart relationship by threads dimensioned to accomplish desired spacing between discs, and hence the degree to which an ear is spaced outwardly from the head.

SUMMARY OF THE INVENTION

In its basic concept, the ear flattening device of this invention comprises a pair of flexible pads fixedly secured

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together in direct contacting engagement with each other at a single point located approximately at their longitudinal and lateral center point, the pads being provided with an adhesive layer on their outer surfaces for releasable attachment one to
5 the back surface of an ear and the other to the confronting surface of the head.

It is by virtue of the foregoing basic concept that the principal objective of this invention is achieved; namely, to provide an ear flattening device of the class described which
10 provides a simplified construction that affords an improved level of reliability in its adhesion to the flexible skin surfaces of the ear and the head.

Another objective of this invention is the provision of an economical ear flattening device of the class described
15 which is anatomically configured to correspond to the various structures of the ear, the concha and the hairline of the head about the ear in order to make fullest use of the skin surfaces available for adhesion while maintaining the device in substantially hidden condition behind the ear.

20 Still another objective of this invention is the provision of an ear flattening device of the class described which utilizes double layer pad members which are configured to partially separate one layer from the other in the area of the fixed connection of the two tab members together, forming
25 a stress-relieving pocket between the pad layers so as to

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ensure the continued adhesion of the full surface area of the outer pad layer with the skin surface of the head and ear.

A further objective of this invention is the provision of an ear flattening device of the class described which is of
5 simplified construction for economical and high volume manufacture.

The foregoing and other objects and advantages of this invention will appear from the following detailed description, taken in connection with the accompanying drawings of
10 preferred embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an enlarged plan view of an ear flattening device embodying the features of this invention.

Fig. 2 is a sectional view taken along the line 2-2 in
15 Fig. 1.

Fig. 3 is a sectional view similar to that of Fig. 2 but showing an alternative, double layer configuration of the pad members.

Fig. 4 is a fragmentary rear elevation of portions of a
20 person's head and ear showing the ear flattening device of this invention installed in operative, ear flattening position.

Figs. 5-8 are schematic plan views of various pad configurations and positionings of the ear flattening device
25 of this invention in relation to various ear shapes and sizes

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or protrusion correction that is needed.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to the embodiment illustrated in Figs. 1 and 2 of the drawings, the ear flattening device illustrated includes a pair of pads 10 and 12 in the preferred form of thin, flexible sheets. Although the sheets may be made of any suitable flexible material such as cloth, rubber or synthetic thermoplastic resin, they preferably are formed of medical grade adhesive tape.

10 The pads 10 and 12 are fixedly joined directly together, preferably at their approximate longitudinal and lateral center point so as to maximize the surface area surrounding it, by any suitable securing means such as by heat or solvent fusing, chemical bonding such as adhesive 14, rivet 16, or
15 other alternative types of connectors that may be desired. For purposes of clear illustration only, the adhesive bond 14 in Fig. 2 is shown as a rather substantial, separate element. It is to be understood however that in fact the adhesive is an agent which bonds the confronting inner side surfaces of the
20 pads 10 and 12 to each other at that point.

Each pad is provided with a layer of pressure sensitive adhesive 18 on its outer side. These adhesive layers are covered temporarily with a removable cover sheet 20 to protect the adhesive layer prior to use.

25 The cover sheet illustrated is provided as a single sheet

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of paper or other suitable material folded at its center to form an outwardly projecting, diamond-shaped pull tab 22. The diamond shape allows the pull tab to collapse against the cover sheet 20 to minimum thickness for convenient packaging and storage. However, when the pull tab is grasped between thumb and finger, it collapses inwardly to form an elongated, laterally extending pull tab of sufficient gripping surface area to enable pulling the cover sheet 20 away from the adhesive layer.

Referring now primarily to Figs. 1 and 5-8 of the drawings, it has been discovered through experimentation and modification that it is preferable that the pads 10, 12 be anatomically configured to correspond with various structural features of the ear and head. Specifically, in the embodiments illustrated the pads are configured with an inner edge that is curved so as to conform to the curvature of the concha of an ear. In adults, the curvature of the concha is very nearly uniform irrespective of the various sizes and shapes of adult ears. By configuring the inner edge of the pads to correspond with the concha, the ear flattening device of this invention can be positioned immediately adjacent the concha along the entire length of the pad, and thereby may be sized so as to utilize a maximum amount of skin surface area on the ear and on the head for adhesion while still maintaining the device in hidden condition behind the ear. By

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the same token, the outer edge of the pads may similarly be configured with a curvature that corresponds generally to the hair line of a head so that most efficient use of available skin surface area may be obtained for enhanced adhesion of the device for use. The various figures 5-8 illustrate this advantage in relation to various ear shapes and placements of the device for correcting various ear-protrusion problems.

Referring generally to Figs. 4-8 of the drawings, the ear flattening device described hereinbefore is applied by first removing the protective cover sheets 20 to expose the adhesive layers 18 of the sheet pads 10 and 12, and the device is positioned behind the ear of the wearer with the inside curved edge of the pads positioned against the concha of the ear, and the ear is pressed inwardly toward the head. The adhesive layers 18 thus are brought into pressure contact with the backside of the ear and the confronting side of the head. When inward pressing of the ear is relieved, the ear retracts laterally outward from the side of the head to the extent permitted by the device.

In this regard, it is to be understood that the degree of the inward drawing of the ear can also be selected. While it is desirable that the connection between pads 10, 12 be located at approximately the center point of the pads and that that connection point be as small as practical, since that is the area where the greatest pulling stress is exerted

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against the adhesive engagement of the device with the skin surfaces, that is the point that determines the maximum straight-line distance between ear surface and head surface. Obviously, if that center point is located closer to the concha, the outer edge of the ear will be disposed further from the head than if that center point were disposed outwardly of the concha so as to hold the outer part of the ear to the same distance from the side of the head. Accordingly, given any particular shape of the pads, the larger a pad size that is used, the further outward the center connection point is disposed, and hence the closer an ear is retained relative to the side of the head.

Fig. 3 illustrates a modified form of ear flattening device embodying the features of this invention. In this embodiment, the same assembly of sheet pads 10 and 12 and desired connecting means, in this case rivet 16, is employed as in the previously described embodiment. In this modification however, a second layer of pad material 10', 12' is provided to overlie and be adhered to the inner pad layers 10, 12. An outer adhesive layer 18' is provided on the outer sides of pad layers 10', 12' to engage the skin surfaces, and cover sheets 20 are provided as described earlier. It has been discovered through experimentation that this construction affords additional advantages particularly in situations where the outward pull of the ear is significant and where pad size

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or configuration requirements result in reduced adhesive-to-skin bonding contact that may weaken and release prematurely under the stresses of use. In this regard, it has been discovered that in use, the greatest stress applied against the pad members is at their connection point, the bond 14 in Fig. 2 and the rivet 16 in Fig. 3, since it is prevented the elasticity, flexibility and stretching that is available to the remainder of the pads. Accordingly, it is not uncommon for the adhesive to separate from the skin in the immediate area of the connection point. With the continued outward pull of the ear over time, the adhesive bond continues to weaken progressively outwardly from the center to a point where it can entirely fail or the released pad material has been allowed to stretch to the point where the ear is not being retained adequately in the desired position.

However, the adhesive bond between the pad tape layers 10, 10' and 12, 12' is extremely tenacious, and I have discovered that when the inner pad layers 10, 12 are secured directly together, as by rivet 16, and the outer pad layers 10', 12' are secured positively to the skin surfaces of the ear and the head, the stress that is applied in the area of the center point connection does result in limited separation of the layers of the pads directly over the connection area. However, the pocket that is formed between the two separated layers in that area does not increase in size because of the

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tenacity of the bond between the two adhered layers of tape. Rather, because the stress is taken up by the separation of the two pad layers in forming the pocket over the connection point, the integrity of the adhesive 18' bond to the skin is maintained, and therefore, there is no separation of the adhesive-coated pad from the skin surface that otherwise can occur at that center stress point. Fig. 4 illustrates, in broken lines, the hidden separation of the pad layers and the pocket formed under these stress conditions.

10 It will be apparent to those skilled in the art that a variety of changes may be made in the size, shape, type, number and arrangement of parts of the ear flattening device described hereinbefore, without departing from the spirit of this invention and the scope of the appended claims.

15 Having thus described my invention and the manner in which it may be used, I claim:

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CLAIMS:

1. An ear flattening device, comprising:
 - a) a pair of flexible pads having inner and outer sides,
 - b) connecting means engaging said pair of flexible pads
5 to secure their inner sides directly together at approximately the center point of the longitudinal and lateral dimensions of said pads, and
 - c) a layer of pressure sensitive adhesive on the outer
10 sides of the pair of pads for releasably securing the pads one to the backside of an ear and the other to the confronting skin surface of the head, whereby to retain the ear a desired distance from the side of the head.
2. The ear flattening device of claim 1 wherein said pads include an inner lateral edge configured to correspond to
15 the natural curvature of the concha of an ear, whereby the device may be positioned so that substantially the entire length of the inner edge of the pads may be adhered to the skin surfaces of the ear and the head closely adjacent the concha.
- 20 3. The ear flattening device of claim 1 wherein the pads include an outer lateral edge configured to correspond to the curvature of the hair line of a head, whereby the pad may be positioned relative to the hair line so that substantially the entire length of the outer edge of the pad may be secured

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to the skin surfaces of the ear and the head adjacent the hair line of the head.

4. The ear flattening device of claim 1 wherein said securing means comprises bonding said inner sides of the pad together at a common point disposed at approximately the center point of the pads.

5. The ear flattening device of claim 1 wherein said securing means comprises a rivet securing said inner sides of the pads together at the approximate center point of the pads.

10. 6. The ear flattening device of claim 1 including a second pad layer adhered to the outer side of each pad, each outer pad layer including a layer of pressure sensitive adhesive on its outer side for releasably securing the outer pad layers one to the backside of an ear and the other to the confronting surface of the head.

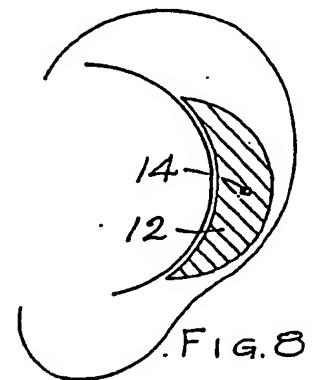
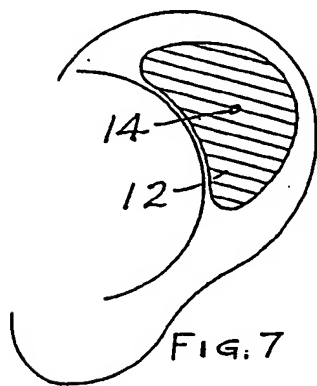
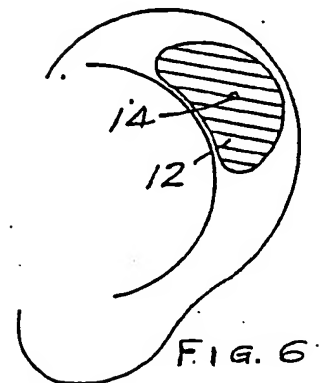
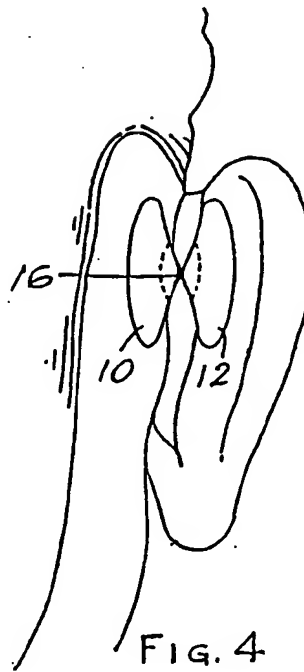
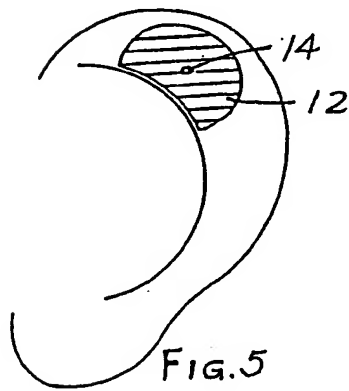
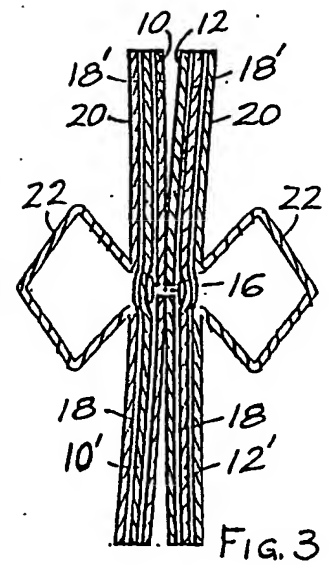
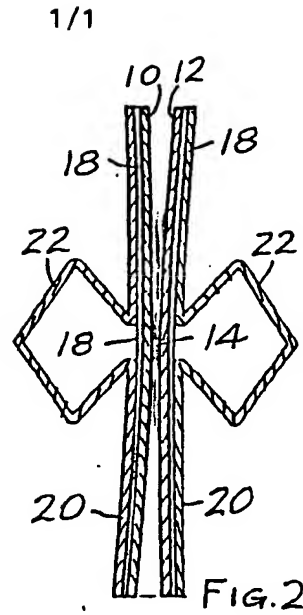
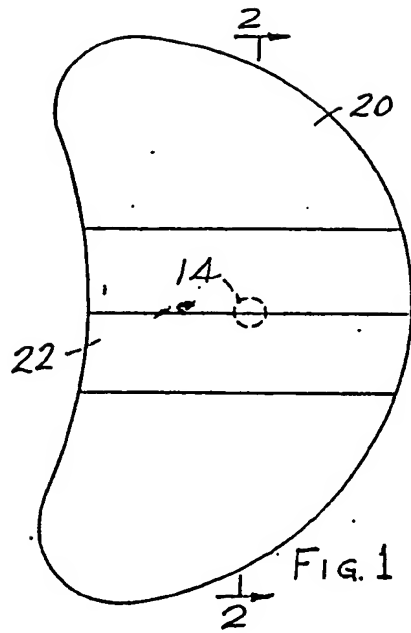
7. An ear flattening device, comprising:

- a) a pair of flexible pads each having inner and outer sides and an inner lateral edge configured to correspond to the curvature of the concha of an ear,
- 20 b) connecting means interconnecting said pair of pads, and
- c) a layer of pressure sensitive adhesive on the outer sides of the pair of pads for releasably securing the pads one to the back side of an ear and the other to the confronting
- 25 surface of a head.

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8. An ear flattening device, comprising:

- a) a pair of flexible pads having inner and outer sides,
- b) connecting means fixedly securing to said flexible pads together, a layer of pressure sensitive adhesive on the outer sides of the pair of pads surrounding the fixed securement of the connecting means to the flexible pads, and
- c) an outer pad layer having inner and outer sides and secured on its inner side to the adhesive layer on the outer side of each pad, said outer pad layer having a layer of pressure sensitive adhesive thereon for releasably securing the outer pad layers one to the backside of an ear and the other to the confronting surface of the head.



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US93/10105

A. CLASSIFICATION OF SUBJECT MATTER

IPC(5) : A61F 5/08

US CL : 602/17; 606/204.15

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 128/846, 857, 864-866; 602/17, 24; 606/204.15; 63/1, 2, Dig. 1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
NONE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 5,076,262 (COFFEY) 31 December 1991. See entire document.	1-4, 7
X	US, A, 1,050,744 (MONIER-WILLIAMS) 14 January 1913. See entire document.	1, 4, 6, 8
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Y		5
A	DE, A, 0,240,649 (KAHN) 14 June 1911.	1-8
A	US, A, 5,081,853 (SALYER) 21 January 1992.	1-8
A	US, A, 2,975,538 (MURFIN) 21 March 1961.	1-8
A	US, A, 2,096,389 (BODE) 19 October 1937.	1-8



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be part of particular relevance

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"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z"

document member of the same patent family

Date of the actual completion of the international search

27 JANUARY 1994

Date of mailing of the international search report

21 MAR 1994

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